Docket No. 2804-0102P

IN THE CLAIMS:

Please amend the claims as follows:

16. (Amended) The production method of semiconductor substrate as claimed in Claim 10, wherein said oxidizing atmosphere contains a mixed gas of oxygen and hydrogen or water vapor.

17. (Amended) The production method of semiconductor substrate as claimed in Claim 10, wherein temperature of heat treatment in said oxidizing atmosphere is 600. or more and 1300. or less.

18. (Amended) The production method of semiconductor substrate as claimed in Claim 10, wherein heat treatment in said oxidizing atmosphere comprises two-stage heat treatment of different temperatures of a high temperature heat treatment performed at a high temperature and a low temperature heat treatment performed at a lower temperature subsequent to said high temperature heat treatment.

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20. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein temperature at which a silicon layer is epitaxially grown on said first silicon layer to form a second silicon layer is 550. or more and 1050. or less.

21. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein before said step of epitaxially growing a silicon layer on said first silicon layer to form a second silicon layer, said first silicon layer is heat treated in a hydrogen atmosphere or in vacuum.

22. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein a base pressure of growing chamber of apparatus used when a silicon layer is epitaxially grown on said first silicon layer to form a second silicon layer is 10^{-7} Torr or less.

23. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein method of epitaxially growing a silicon layer on said first silicon layer to form a second silicon layer is a UHV-CVD method or a MBE method.

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24. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein when epitaxially growing a silicon layer on said first silicon layer to form a second silicon layer, growing temperature is set high only in an initial stage of growth.

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26. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein after said step of ion implanting to said second silicon layer to make deep part of interface amorphous, and recrystallizing said amorphous layer by heat treatment, or after said step of epitaxially growing a silicon layer to form a second silicon layer, further comprising a step of heat treatment in hydrogen.

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28. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein after said step of ion implanting to said second silicon layer to make deep part of interface amorphous, and recrystallizing said amorphous layer by heat treatment, surface of silicon layer is flattened.

30. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein said step of forming a first silicon layer on said insulating underlay is a step of epitaxially growing said first silicon layer on said insulating underlay.

31. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein said insulating underlay is a single crystal oxide substrate.

33. (Amended) The production method of semiconductor substrate as claimed in Claim 9, wherein said insulating underlay is a laminated substrate comprising crystalline oxide layer or fluoride layer stacked on a silicon substrate as a substrate.

35. (Amended) The semiconductor substrate characterized in that it is produced by the production method as claimed in Claim 9.

36. (Amended) The semiconductor substrate as claimed in Claim 1, characterized in that it is produced by the production method as claimed in Claim 9.

A8 Cont

37. (Amended) A semiconductor device characterized in that it is a semiconductor device using a semiconductor substrate as substrate, as said semiconductor substrate, the semiconductor substrate as claimed in Claim 1 is used, whereby improving device characteristics.

38. (Amended) The semiconductor device as claimed in Claim 37, wherein said semiconductor device is MOSFET, and said device characteristic improved by using the semiconductor substrate as claimed in Claims 1 as semiconductor substrate thereof is at least one of mutual conductance, cut-off frequency, flicker noise, electrostatic discharge, drain withstand voltage, dielectric breakdown charge amount, and leakage current characteristics.

39. (Amended) The semiconductor device as claimed in Claim 38, wherein said MOSFET uses the semiconductor substrate as claimed in Claim 1 as the semiconductor substrate thereof, is a MOSFET formed on a semiconductor substrate with a thickness of crystalline silicon layer of 0.03.m or more and 0.7.m or less, no kink appears in current - voltage characteristic, drain withstand voltage for the case of a gate length of 0.8.m is 7V or more, and has a

characteristic that input gate voltage spectral density representing flicker noise is 3×10^{-12} V^2/Hz or less at a measuring frequency of 100 Hz.

A8 cont

40. (Amended) The semiconductor device as claimed in Claim 37, wherein said semiconductor device is a bipolar transistor, and device characteristic improved by using the semiconductor substrate as claimed in Claim 1 as semiconductor substrate thereof is at least one of mutual conductance, cut-off frequency, collector current, leakage current, and current gain.

41. (Amended) The semiconductor device as claimed in Claim 37, wherein said semiconductor device is a diode, and device characteristic improved by using the semiconductor substrate as claimed in Claim 1 as semiconductor substrate thereof is at least one of reverse bias leakage current, forward bias current, and diode factor.

42. (Amended) The semiconductor device as claimed in Claim 41, wherein said diode is a pin photodiode formed on the semiconductor substrate as claimed in Claim 1 as the semiconductor substrate thereof having a thickness of crystalline silicon layer of 0.03.m or more and 0.7.m or

a8 Cont.

less, having a pin area width of each 1.m, and having characteristics that dark current measured under a condition applied with a 2V reverse bias is 10^{-11} A or less, and photocurrent under light irradiation of $1W/cm^2$ intensity at wavelength 850 nm is 10^{-10} A or more.

43. (Amended) The semiconductor device as claimed in Claim 37, wherein said semiconductor device is a semiconductor device integrated circuit, and device characteristic improved by using the semiconductor substrate as claimed in Claim 1 as semiconductor substrate thereof is at least one of frequency characteristic, noise characteristic, amplification characteristic, and power consumption characteristic.

44. (Amended) A semiconductor device using a semiconductor substrate as a substrate characterized in that as said semiconductor substrate, the semiconductor substrate produced by the production method as claimed in Claim 9 is used, whereby improving device characteristics.

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49. (Amended) The semiconductor device as claimed in Claim 48, wherein said diode is a pin photodiode formed on the semiconductor substrate as claimed in Claim 1 as said

semiconductor substrate thereof having a thickness of crystalline silicon layer of 0.03.m or more and 0.7.m or less, having a pin area width of each 1.m, and having characteristics that dark current measured under a condition applied with a 2V reverse bias is 10^{-11} A or less, and photocurrent under light irradiation of $1W/cm^2$ intensity at wavelength 850 nm is 10^{-10} A or more.

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58. (Amended) The production method of semiconductor device as claimed in Claim 51, wherein after said step of ion implanting to said second silicon layer to make deep part of interface amorphous and recrystallizing said amorphous layer by heat treatment, or after said step of epitaxially growing said silicon layer to form a second silicon layer, further comprising a step of heat treatment in hydrogen.

59. (Amended) The production method of semiconductor device as claimed in Claim 51, wherein after said step of ion implanting to said second silicon layer to make deep part of interface amorphous and recrystallizing said amorphous layer by heat treatment, surface of said silicon layer is flattened by chemical and/or mechanical polishing.